ARMY INSTITUTE OF PUBLIC HEALTH
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Army Vector-borne Disease Report

4 September 2012

Data is preliminary and subject to change

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- **West Nile Virus:** CDC reports 1,590 human cases; Army reports 6 cases (an increase of 1 probable) including one death.
- **WNV mosquito testing:** PHCR-South reports 1 additional positive mosquito pool since the last report, the first from Fort Hood, TX.
- **Tick-borne diseases:** In 2012, the majority of Army Lyme disease case reports are for dependents in PHCR-Europe and PHCR-North; a novel tick-borne pathogenic human virus (Heartland virus) in the Midwestern U.S. has been discovered.

West Nile Virus (WNV)

United States

- 889 (56%) of WNV cases were neuroinvasive (i.e., meningitis or encephalitis).
- 40 states report human cases of neuroinvasive disease, 4 more than last week.
- Four states (TX, MS, SD, OK) reported 64% (n=1009) of all cases; TX reported 46% of all cases (n=733) and has more than 7 times the number of cases of the next highest states, SD and MS (n=98).

Cases in Army Personnel

- No additional fatalities have been reported among Army personnel since the 23 August report.
- The average age of Army cases is 57 (range 23-77 years).
- Joint Base San Antonio-Fort Sam Houston (JBSA-FSH) still reports 2 confirmed and 2 probable Army cases (including the previously reported fatality in a retiree).
- Fort Hood reports 2 probable WNV cases (1 new case in an active duty (AD) Soldier under 50 years of age); confirmatory labs on both cases are pending, geographic areas of exposure are being investigated.

DoD Mosquito Surveillance from Army Laboratories

	PHC Region	Previous Week¥	Year to Date	No. positive locations
Positive Mosquito Pools	North	0	47	5
	South	1	61	5
	West	0	4	2

Source: Official communication.

¥Absolute difference between last published report and this week's year to date number.

Prevention and Control Activities

- PHCR-South is working with JBSA-FSH Preventive Medicine assets which are leading the WNV response at JBSA-FSH; 502nd Civil Engineering Squadron is providing vector control support.
  - In response to increased WNV activity, adulticide fogging in addition to standard larvicide is planned.
- Fort Hood conducts weekly mosquito trapping and continues to provide education on mosquito precautions and personal protective measures; Fort Hood reports their first positive mosquito pool.

2012 WNV Human Cases[β]		
Population	**Previous Week¥**	**Year to Date**
United States	472	1,590
Army Cases Confirmed and Probable		
Army Active Duty‡	1	2
Army Beneficiaries	0	4
2012 WNV Human Deaths		
United States	24	65
Army Retirees	0	1

Source: CDC, AIPH DRSI, and official communication.

Note: Reporting location may differ from exposure location.

βConfirmed and probable neuroinvasive and nonneuroinvasive cases.

¥Absolute difference between last published report and this week's year to date number.

‡Includes recruits and cadets.

Lyme Disease

- 62% (n=61) of all reported confirmed Lyme disease cases in 2012 occurred in non-AD Army beneficiaries.
- From 1 Jan–03 Sep 2012, ERMC reported the largest proportion of Army Lyme disease cases (49%), including 57% of all AD cases.
- The spring/summer peak of Lyme disease vector (*Ixodes scapularis*) abundance has passed, but adult ticks are active in winter months.
- From Oct. 2011 through April 2012, 87 of 258 (34%) of *I. scapularis* adults submitted to the DoD Human Tick Test Kit Program were positive for Lyme disease.

2012 Lyme Disease Cases		
Population	**Previous Week¥**	**Year to Date**
United States[β]	1,481	15,748
Confirmed Army Cases		
Army Active Duty‡	0	37
Army Beneficiaries	1	61
Regional Case Distribution		
PHCR-Europe	0	48
PHCR-North	1	30
PHCR-South	0	11
Other/Unknown	0	9

Source: CDC and AIPH DRSI.

Note: Reporting location may differ from exposure location.

¥ Difference between last published report and this week's year to date number.

βProvisional cases, weeks ending 27 August.

‡Includes recruits and cadets.

Heartland Virus

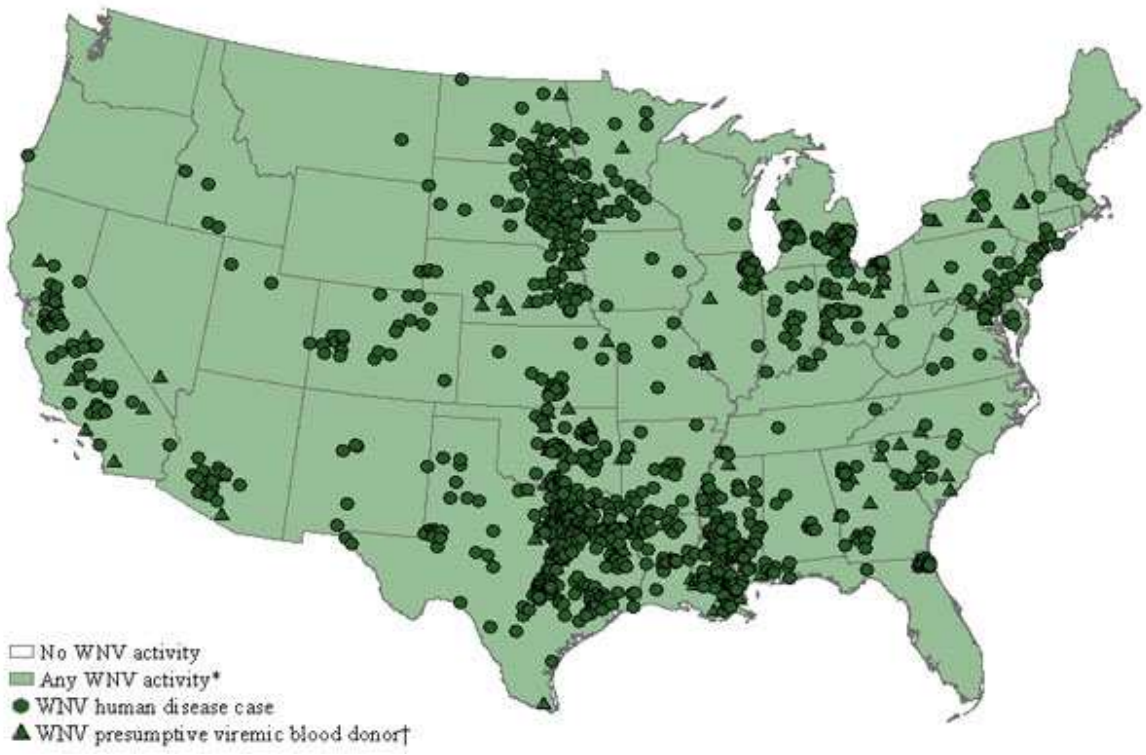
- In the 30 August issue of the *New England Journal of Medicine*, McMullan et al. describe their identification of a novel tick-borne pathogenic phlebovirus in the Midwestern United States, termed Heartland virus.
- *Ehrlichia chaffeensis* was initially suspected as the causal agent but was not found; tests revealed viruses consistent with members of the Bunyaviridae family, novel members of the phlebovirus genus.
- The phlebovirus genus contains more than 70 viruses which are divided according to whether they are borne by sand flies, mosquitoes, or ticks.
- The new virus is closely related to a tickborne virus called severe fever with thrombocytopenia syndrome virus, recently identified in China.
- Clinical laboratory results, symptoms, and occurrence of tick bite relating to Heartland virus are similar to those of ehrlichiosis infections.
- Further research is needed, but the suspected vector is the lone star tick (*Amblyomma americanum*), the same vector of ehrlichia infections, whose range spans most of the Eastern U.S.
- This novel Heartland virus should be considered as a possible etiologic agent in these instances, particularly when suspected ehrlichiosis does not improve within a few days of doxycycline treatment.
- US Army Public Health Command tick testing labs have acquired the assay from the CDC and will begin testing tick samples.

Additional Resources: CDC West Nile Virus • CDC US Tickborne Diseases • Human Tick Test Program • USAPHC WNV Fact Sheet
Previous Army Vector-borne Disease Reports
Key: CDC-Centers for Disease Control and Prevention; DRSi-Disease Reporting System Internet; Mosquito pool-1 to 50 mosquitoes

Questions?
http://phc.amedd.army.mil

Contact us at: USAPHC Disease Epidemiology or 410-417-2377

CDC: West Nile virus (WNV) activity reported to ArboNET, by state, United States, 2012 (as of August 28, 2012)



Footnote: The map displays white areas that represent no WNV activity reported, light green areas that represent any WNV activity* , dark green circles that represent disease cases, and dark green triangles that represent presumptive viremic blood donors.

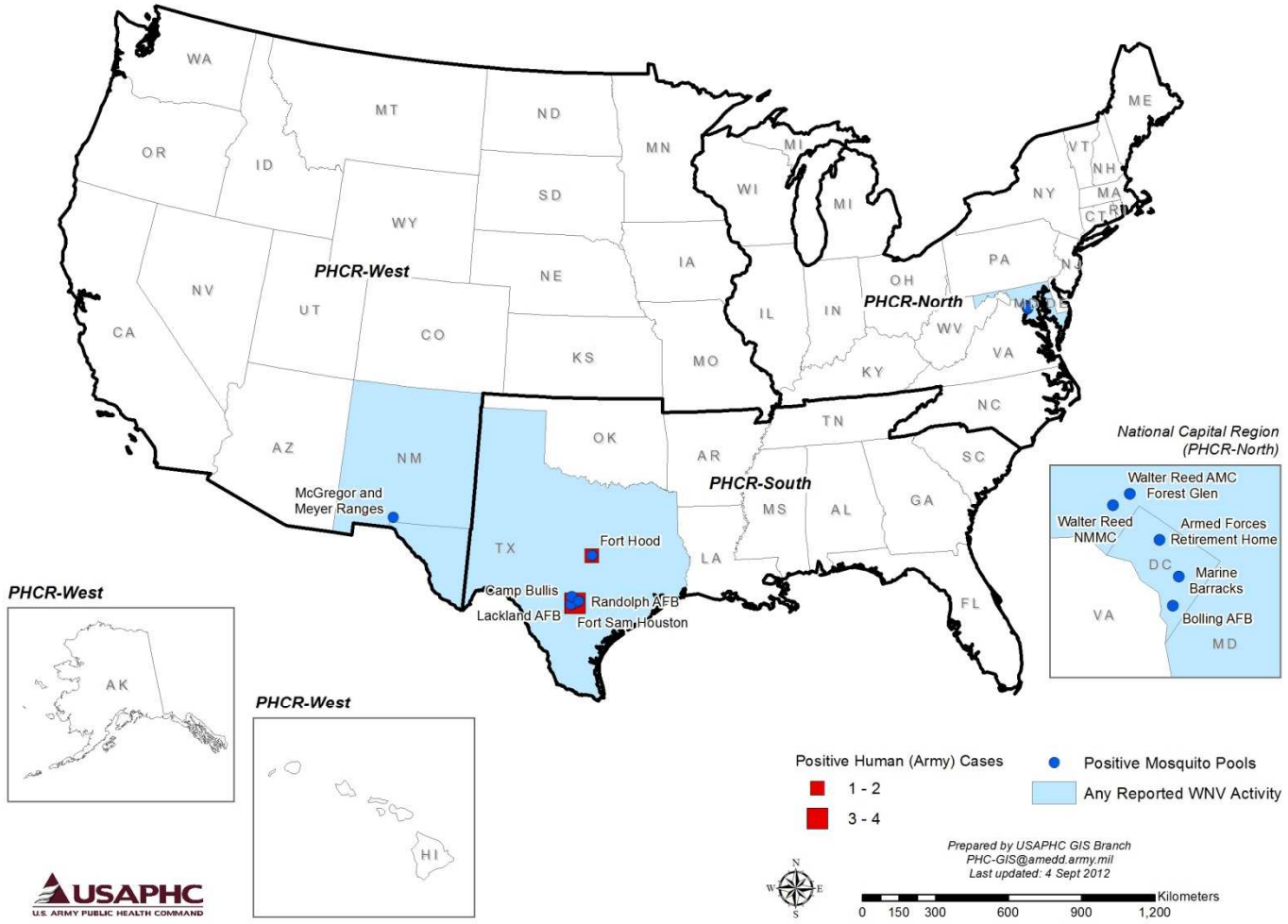
* Includes WNV human disease cases, presumptive viremic blood donors, veterinary disease cases and infections in mosquitoes, birds, and sentinel animals.
† Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

Map shows the distribution of WNV activity* (shaded in light green), human infections (dark green circles), and presumptive viremic blood donors (dark green triangles) occurring during 2012 by state. If West Nile virus infection is reported from any area of a state, that entire state is shaded.

Source: http://www.cdc.gov/ncidod/dvbid/westnile/Mapsactivity/surv&control12MapsAnybyState.htm

West Nile Virus Activity, by State and Army Public Health Command Region (PHCR), United States, 2012

As of September 4, 2012



Footnote: The map displays white areas that indicate no reported West Nile virus (WNV) activity, light blue areas represent any reported WNV activity* within a state; dark blue circles represent WNV positive mosquito pools on military installations, and red squares represent the reporting location/installation of Army human cases (probable and/or confirmed). If West Nile virus infection is reported from any area of a state, that entire state is shaded light blue.

*Includes WNV Army human disease cases (probable and/or confirmed) and infections in mosquito pools on military installations.

Prepared by: US Army Public Health Command Geographic Information Systems Branch